APPENDIX C

GLOSSARY

NOTE: Many of the following definitions are Yucca Mountain Site Characterization Project-specific.

Glossary Item	Definition or Explanation
Alcove	Underground excavations made to the sides of drifts or ramps of the Exploratory Studies Facility (ESF) or Enhanced Characterization of the Repository Block (ECRB) Cross Drift and used as sites for in situ testing of ambient rock characteristics or thermal perturbations of those characteristics.
Alluvium	Unconsolidated soil and rock fragments deposited by the action of rivers, and sometimes the term alluvium is used loosely to refer to all valley-fill material, which is unconsolidated rock fragments derived from the erosion of the bordering mountains.
Analysis and Model Report	A report that documents the technical underpinnings used to defend the applicability of the model for its intended purpose of evaluating the postclosure performance of the potential Yucca Mountain Repository System.
Aquifer	A water-bearing layer of permeable rock that is capable of yielding groundwater to supply wells and springs.
Backfill	Material placed in the emplacement drifts to refill the drift after WPs are placed in the drift and prior to closing the repository.
Borehole	A hole bored or drilled to investigate subsurface features.
Characterization	A study done to investigate (i.e., to determine the character or quality) and describe an item or process.
Colloid	Large molecules or small particles that have at least one dimension within the size range of 10^{-9} to 10^{-6} m, which is suspended in a liquid, such as groundwater. Some radionuclides bind with colloids (either reversibly or irreversibly) and can travel great distances in groundwater. Colloids may form directly from insoluble radionuclides (intrinsic colloids), may form from degraded SNF or glass waste forms (waste form colloids), or may form from other natural or man-made materials with which radionuclides can bind (pseudocolloids).
Cross Drift	The west-southwest trending excavation extending from near the base of the north ramp of the ESF through the main trace of the Solitario Canyon fault.
Design Feature	Enhancements to design that can be easily incorporated within multiple alternative designs.
Drift	Mining terminology for a horizontal underground passage.

Glossary Item	Definition or Explanation
Drip Shield	A sheet of impermeable material placed above a WP to prevent seepage water from dripping onto the WP.
Emplacement Area	That part of the geologic repository in which radioactive waste would be placed.
Engineered Barrier System	Those engineered features of the geologic repository that contribute to containing radioactive wastes and preventing or delaying them from escaping the geologic repository. Engineered barriers are items such as WPs and drip shields.
Fault Zone	An area composed of many small, closely spaced rock fractures that show evidence of movement, or such an area composed of breccia or fault gouge.
Flexible Design	Repository design that provides operational and control flexibility that allows repository operations for various heat loading scenarios by adjusting heat removal ventilation rates and duration so as to limit the maximum postclosure surface temperatures of the WPs and the temperatures in the emplacement drift walls to values that will reduce uncertainty in coupled thermal-hydrological-mechanical-chemical process.
Geologic Repository	A facility designed for underground disposal of spent nuclear fuel and high-level radioactive waste.
Hydraulic Conductivity	A measure of the ability of a soil or rock material to pass water through its connected pores or fractures.
Important to Safety	With reference to structures, systems, and components (SSCs), those engineered features of the geologic repository operations area, whose function is to (1) provide reasonable assurance that high-level waste can be received, handled, packaged, stored, emplaced, and retrieved without exceeding the proposed radiological exposure limit, or (2) prevent or mitigate design basis events that could result in doses equal to or greater than the proposed radiological exposure limit to any individual located on or beyond any point on the boundary of the site.
Key Technical Issues	The ten issues identified by the U.S. Nuclear Regulatory Commission that must be resolved before the nuclear waste repository can be issued a license. Specifically, these issues relate to: Unsaturated Zone, Igneous Activity, Container Life and Source Term, Structural Deformation and Seismicity, Saturated Zone, Radionuclide Transport, Evaluation of the Near Field, Thermal Effects on Flow, Repository Design and Thermal Mechanical Effects, and TSPA Integration.
Longitudinal Dispersivity	A measure of the ability of a soil or rock material to spread a solute moving through it, by elongating the solute plume in the direction of the flow lines.

Glossary Item	Definition or Explanation
Model	A depiction of a system, phenomenon, or process including any hypotheses required to describe the system or explain the phenomenon or process. The depictions may be conceptual or numerical.
Natural Barrier System	Those natural features of the geologic repository that contribute to containing radioactive wastes and preventing or delaying them from leaving the geologic repository. Natural barriers are items such as the rocks above and below the emplacement area.
Near-Field Environment	The zone of environmental conditions that directly impacts the WP container materials and the waste form.
Niche	A relatively shallow excavation in the side of a drift where scientific experiments can be conducted.
Perched Water	Small bodies of water held above the water table and supported by a relatively impermeable layer of rock.
Performance-Based Approach	A requirement that relies on measurable or calculable outcomes, with some flexibility in meeting those outcomes. A performance-based regulatory approach establishes performance and results as the primary basis for regulatory decision-making.
Performance Confirmation	The program of tests, experiments, and analyses that are conducted to evaluate the adequacy of the information used to demonstrate compliance with the performance of objectives of 10 CFR 63.
Permeability	Measurement of the degree to which a given material or substance will permit the passage of air or water.
Porosity	The fraction of the total volume of soil or rock occupied by void spaces. The "effective porosity" is a measure of the fraction of soil or rock occupied by connected void spaces and can be determined from tracer testing.
Postclosure	The time after the repository is closed (contrast with preclosure).
Preclosure	The time before the repository is closed (contrast with postclosure).
Process Model Report	A report that documents a synthesis of the necessary and sufficient technical information that the Project will be relying upon to support its site suitability evaluation and the licensing safety case pertaining to a particular process model.
Quality Assurance	All those planned and systematic actions necessary to provide adequate confidence that the geologic repository and its subsystems or components will perform satisfactorily.

Glossary Item	Definition or Explanation
Recharge	Water that flows into an aquifer and replaces, or recharges, water that is lost from the aquifer by pumping or natural discharge.
Repository Block	The geologic structure (i.e., block of rock) inside of which the emplacement area would be constructed.
Risk-Informed Approach	An approach to regulatory decision-making whereby risk insights (results and findings from risk assessments) and other factors are considered together to establish requirements that focus licensee and regulatory attention on design and operational issues commensurate with their importance to public health and safety.
Repository Horizon	The stratigraphic horizon in which the potential repository might be constructed.
Saturated Zone	The subsurface zone below the water table in which all void space is filled with water at a pressure greater than the pressure of the atmosphere.
Sensitivity Studies	Studies of models to determine the magnitude of differences in the results of the models that result from changes to the input values. These studies determine how sensitive the results of the model are to changes in the inputs and permit researchers to determine the input factors that most affect the results.
Specific Flux	The fraction of the total volume of soil or rock occupied by void spaces. The "effective porosity" is a measure of the fraction of soil or rock occupied by connected void spaces and can be determined from tracer testing.
Sufficiency	"…the preliminary comments of the U.S. Nuclear Regulatory Commission concerning the extent to which the at-depth site characterization analysis and the waste form proposal for Yucca Mountain seem to be sufficient for inclusion in any application to be submitted by the Secretary for licensing of the site as a repository…" (Nuclear Waste Policy Act of 1982, §114(a)(1)(e). The NRC sufficiency comments are required to be included as part of the Site Recommendation package to be submitted by the Secretary to the President.
Transmissivity	The hydraulic conductivity multiplied by the aquifer thickness.
Tuff	Volcanic rock resulting from pyroclastic (explosive) volcanic ash deposits.
Unsaturated Zone	The volume of earth below the ground surface, and above the water table, in which the void space contains water at less than atmospheric pressure and air at atmospheric pressure.
Vitric	Any pyroclastic material containing at least 75 percent glass.

Glossary Item	Definition or Explanation
Waste Form	A generic term that refers to radioactive materials and any encapsulating or stabilizing matrix.
Waste Package	An engineered containment vessel made of corrosion-resistant materials, in which radioactive material can be stored.
Water Table	The top of the saturated zone below which the rocks are saturated with water, and above which the rocks are not saturated (i.e., the interface between the saturated and unsaturated zones).